STD 32®

PC/AT®

ZT 88CT92 and ZT 14CT92 Network Interfaces

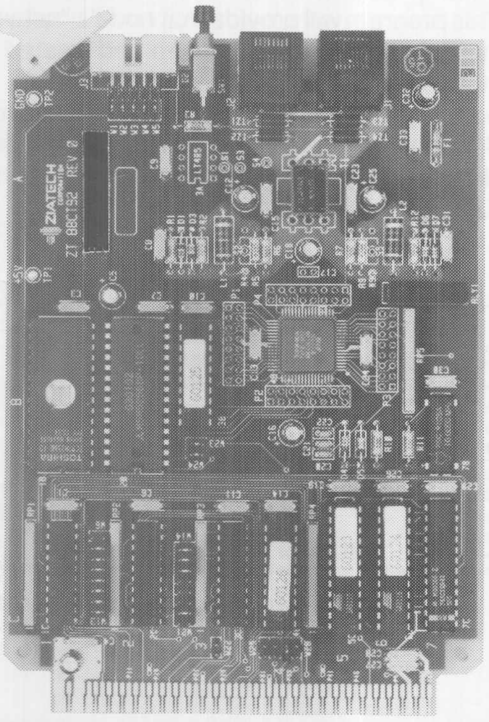
for LONWORKS™ Control Networks

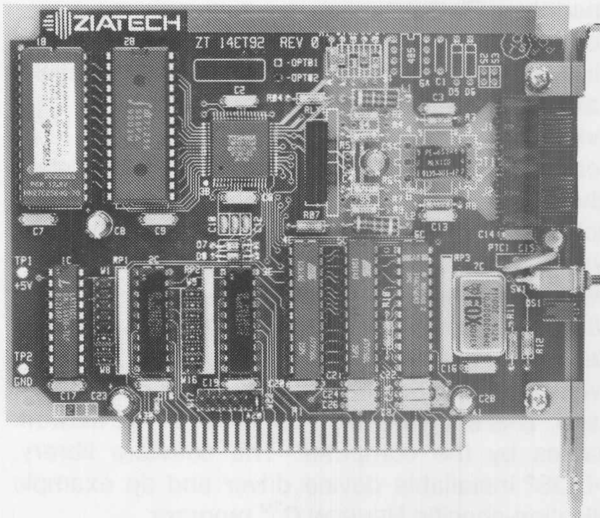
The ZT 88CT92 (STD 32) and ZT 14CT92 (PC/AT) interfaces connect industrial PCs and desktop computers to networks of devices based on Echelon's NEURON®

Ziatech's ZT 88CT92 and ZT 14CT92 provide LONWORKS™ control network connectivity for STD 32 industrial computers and PC/AT computers. LONWORKS control networking is new technology created by Echelon Corporation for use in distributed, intelligent control systems.

A LONWORKS control network consists of multiple devices called NEURONS that are integrated into equipment to provide control and communication functions. The NEURONS communicate with each other through a message-based protocol called LONTALK™. Application software for each NEURON is developed with the LONBUILDER™ Developer's Workbench, manufactured by Echelon Corporation. Once the application is debugged and complete, the Network Interface allows STD 32 and PC/AT Bus systems to configure, install, and monitor NEURON-based devices in the network.

Ziatech's Network Interfaces can be used as a powerful network manager, or to transform an STD 32 or PC/AT computer into a simple node on a LONWORKS control network. The software used to support the Network Interface determines which one of these two functions the interface will serve in the network.





- STD 32 and half-slot PC/AT formats
- Device driver software
- LONWORKS management capability
- Optional interactive software with API functions
- 16-bit I/O address decode capability
- Programmable clock frequencies
- Service request push-button
- Three twisted-pair transceiver options:
  - RS-485, 4.8 Kbps-1.25 Mbps
  - Isolated, 78 Kbps
  - Isolated, 1.25 Mbps
- Interrupt support
- Burned in and tested to guarantee reliability
- Two-year warranty

Preliminary Data Sheet

ZIATECH CORPORATION

Functional Considerations

Network Interfaces

Ziatech Network Interfaces make use of Echelon's 3150™ VLSI Neuron Chip. Both interfaces provide software programmable input clock frequencies, three transceiver options, and a service request indicator/switch.

Neuron Communications

Each interface incorporates a Neuron Chip which provides information exchange across the network media. All layers of the OSI networking model have been implemented with the LonTalk, firmware-based protocol. The 3150 Neuron Chip utilizes external memory (EPROM) to store the LonTalk protocol and the Microprocessor Interface Program.

The Microprocessor Interface Program facilitates communication between the on-board Neuron and the STD 32 or PC/AT host computer.

Programmable Input Frequencies

The ZT 88CT92 and ZT 14CT92 interfaces allow software selection of all valid input clock frequencies: 10 MHz, 5 MHz, 2.5 MHz, 1.25 MHz, and 625 KHz. Lower input clock frequencies reduce power consumption for battery powered operation, but result in slower operation.

Transceiver Options

Communication over the network is accomplished via transceivers. Three serial, twisted-pair transceivers are available *(see Table 1)*.

Service Pin

Control of the Neuron service pin is accomplished on the ZT 88CT92 and ZT 14CT92 by a push-button switch or via software. The Neuron may also drive the service pin with an LED visual status indicator.

Network Interfaces as Nodes

When configuring these Network Interfaces as simple nodes on a LonWorks control network, Ziatech's Network Variable Software for MS-DOS can be purchased. This software allows access to ≤ 62 network variables by the computer. The software library, MS-DOS® installable device driver and an example application-specific Neuron C™ program.

The C compatible object library provides access from a user-written application-specific C program to the MS-DOS installable device driver (Network Interface Driver). The Network Interface Driver is interrupt-driven, buffered message protocol providing fast response time and maximizes the network node's data transfer bandwidth. An example application-specific Neuron C program is included, however, most system designers will create their own application-specific Neuron C program for the Neuron chip on-board the Ziatech Network Interface. This program will provide that node's "network personality," that is, how it is seen and treated by other nodes in the network (***see Figure 1***).

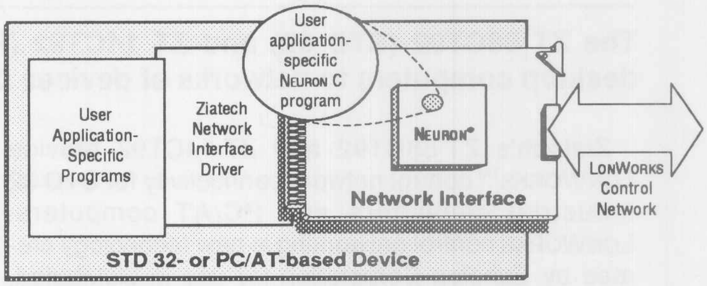

User application-specific Neuron C program
User Application-Specific Programs
Ziatech Network Interface Driver
Neuron®
Network Interface
LonWorks Control Network
STD 32- or PC/AT-based Device

Figure 1. Network Interface as a network node

If more than 62 but less than 255 network variables must be monitored, then the same software described below for Network Managers may be utilized.

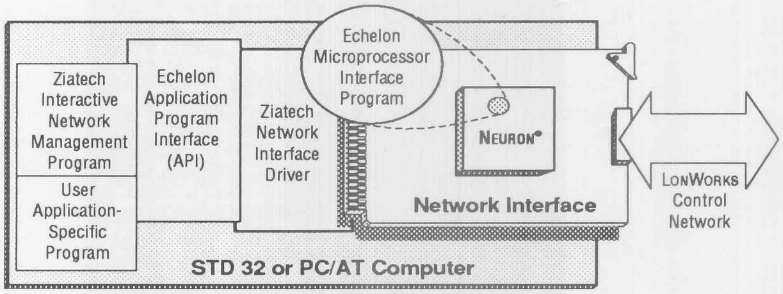

Ziatech Interactive Network Management Program
User Application-Specific Program
Echelon Application Program Interface (API)
Ziatech Network Interface Driver
Echelon Microprocessor Interface Program
Neuron®
Network Interface
LonWorks Control Network
STD 32 or PC/AT Computer

Figure 2. Network Interface as a network manager

Option	Implementation	Speed	# Nodes	Length	Isolation
Default	RS-485	4.8 Kbps-1.25 Mbps	32	1,219-18 m • 4,000-60 ft.	—
01	Transformer Coupled	78 Kbps	64	1,372 m • 4,500 ft.	1.5 KV for 60s
02	Transformer Coupled	1.25 Mbps	64	457 m • 1,500 ft.	1.5 KV for 60s

Table 1. Serial, twisted-pair transceiver options

Network Interfaces as Network Managers

Complex LonWorks control networks may require a network manager to provide functions like binding network variables, program loading, modifying communication parameters and periodic health checking of remote nodes. Up to 255 input network variables can be utilized for receiving network variable update messages. Ziatech's Network Interfaces provide this capability when used with the Network Interface Driver (mentioned previously) and several other programs from Ziatech and Echelon Corporation ***(see Figure 2)***.

Application Program Interface (API)

System management functions are implemented within Echelon's API program. These functions can operate in interactive form with Ziatech's Network Evaluation Kit (refer to separate data sheet). System designers implementing application-specific network management stations can purchase the API and the Neuron-based Microprocessor Interface Program development packages from Echelon directly. (These are licensed programs.)

Microprocessor Interface Program (MIP)

This Echelon-developed program (mentioned in the API section above) translates Neuron management commands and responses as they enter and exit the LonWorks control network.

Interactive Network Management Program

Ziatech's Interactive Network Management Program allows the user to execute API management commands interactively from the console of an STD or PC/AT computer. This program is included with Ziatech's Network Evaluation Kit and can also be licensed for use in production systems. However, in most cases a final application of a network manager would require special user "screens" and "programmed" network management specific to that application (***see Table 2***).

Specifications

ZT 88CT92 (*for STD 32 Bus*)

Mechanical

- Compatible with STD-80 Bus Specification
- Compatible with STD 32 Bus Specification
- 165.1mm (6.5") long by 114.3mm (4.5") high

Connectors

- Two RJ-45s for transceiver connection

Environmental

- -40° to +85° C operating temperature range
- -65° to +150° C storage temperature range
- 15% to 90% relative humidity at 40° C, non-condensing

Data Rates

Please refer to ***Table 1***.

ZT 14CT92 (*for PC/AT Bus*)

Mechanical

- Compatible with IBM Personal Computers or equivalent. Contact Ziatech for information regarding compatibility with portable computers.
- 132.1mm (5.2") long by 106.7mm (4.2") high (half-slot size)

Connectors

- Two RJ-45s for transceiver connection

Environmental

- -40° to +85° C operating temperature range
- -65° to +150° C storage temperature range
- 15% to 90% relative humidity at 40° C, non-condensing

Data Rates

Please refer to ***Table 1***.

Basic Functions	***Advanced Functions***
• Create a network database	• Validate a network database
• Install nodes	• Build a network database from the network
• Bind network variables	• Replace a node
• Monitor network variables	• Reset a node
• Update network variables	• Take a node off-line
	• Put a node on-line
	• Update a node's memory
	• Update a node's location string
	• Monitor critical nodes
	• Set authentication keys
	• Change priorities
	• Download an application

Table 2. Interactive Network Management Program functions

Ordering Information

ZT 88CT92	Network Interface for the STD 32 Bus and software license (with RS-485 transceiver)
ZT 14CT92	Network Interface for PC/AT Bus and software license (with RS-485 transceiver)
ZT 97089M	Network Variable (≤ 62) Software for MS-DOS

Network Interface Transceiver Options

Select transceiver option from below if transformer coupling is required.

Opt 01	Transformer-coupled 78 Kbps twisted-pair transceiver
Opt 02	Transformer-coupled 1.25 Mbps twisted-pair transceiver
Default	RS-485 twisted-pair transceiver

Software Licensing

Ziatech and Echelon software can be licensed for use in production systems. Contact the respective companies for details.

All products are shipped FOB San Luis Obispo, CA, USA. OEM discounts are available for quantity purchases. Contact Ziatech for additional information.

Ziatech provides a two-year warranty on its hardware and software products and a 90-day warranty on its disk media. For a copy of the warranty, refer to the *Technical Data Book* Appendix or contact Ziatech.

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